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Modularly built driver cab model range

The invention relates to a modularly built driver cab model range according to the precharacterizing clause of claim 1.

DE 101 18 344 A1 discloses a modularly built driver cab model range for trucks in order to form differently sized variants of driver cabs. In this case, the basic module, which is of standardized construction for all of the variants of driver cabs, and an add-on module, which can be added onto it and has different length dimensions for each variant of driver cab, are provided. The basic module comprises a front wall, two side walls each with a door and a door frame, a floor and a front roof section, is designed such that it is open to the rear and at the rear has an annular, closed, first flange-mounted region. By comparison, the add-on module has a rear wall, two side wall sections, a floor section and a rear roof section, is designed such that it is open to the front and, at the front, has an annularly closed, second flange-mounted region which is complementary to the first flange-mounted region. In the add-on module, the side wall sections, the floor section and the roof section have different length dimensions for each variant of driver cab.

DE 43 02 489 A1 discloses driver cab model ranges of modular construction for trucks with driver cabs of different length, width and height dimensions. In this case, different roof attachments are provided which can be connected optionally, with or without intermediate parts, releasably or nonreleasably, to standardized driver cab basic body parts. The driver cab side walls and the driver cab rear wall are designed in the

connection region of the roof attachment as a profiled frame which encircles them on three sides and stiffens a roof attachment zone, and the profiled frame is closed on all sides on the front wall side of the driver cab by means of a separate profiled bar.

DE 38 231 161 A1 discloses a kit for wind-directing devices for trucks, in particular for semitrucks, with driver cabs of different external dimensions and semitrailers of different heights. In order to reduce an aerodynamic drag of the truck and to achieve a uniform, closed appearance with identical flow conditions, the use of the wind-directing device in the transition between driver cabs of different external dimension and adjoining semitrailers of different height is proposed. The wind-directing device comprises a height-adjustable wind-directing wing, which is arranged on the rear part of the driver cab roof and is standardized in its dimensions for all variants of driver cabs, standardized wind-directing plates, which are fastened adjustably to the side of the rear wall of the driver cab, and standardized intermediate elements which are arranged between wind-directing wing and driver cab roof and between wind-directing wing and wind-directing plates and connect them.

US 6,178,612 B1 discloses a method for attaching a sleeping cabin to and removing it from a truck. For this purpose, a rear wall of a driver cab of the truck is of removable design and, when removed, can be replaced by a sleeping cabin which can simply be connected to the driver cab of the truck. The truck can therefore be matched simply and rapidly to different requirements, for example to local goods transportation or long-distance goods transportation. In this case, the conversion operations which can be undertaken on the driver cab of the truck are essentially limited to the removal or attaching of the removable rear wall of

the driver cab and the attaching or removal of the sleeping and/or living cabin.

The present invention is concerned with the problem of specifying, for a modularly built driver cab model range of the type mentioned at the beginning, an improved embodiment, in which, in particular, the formation of variants for the driver cab is simplified.

This object is achieved by the subject matter of the independent claim, and advantageous refinements are the subject matter of the dependent claims.

The invention is based on the general concept of providing, for a modularly built driver cab model range with an essentially standardized driver cab basic module, a modularly built driver cab roof which is divided by a transverse bow into a front roof region with a front roof module and into a rear roof region with a rear roof module. In this case, at least two different front roof modules and/or two different rear roof modules are provided, said roof modules differing from one another at least with regard to their shape and/or function, and, as a result, permitting a variable construction of the driver cab roof.

The driver cab basic module has a front wall, two side walls and a rear wall and a driver cab floor, with the transverse bow according to the invention connecting the two side walls in the region of their B-pillar on the roof side, but with the transverse bow being part of the modular driver cab roof.

The front roof module adjoins the transverse bow at the front in the direction of travel and the rear roof module adjoins it at the rear in the direction of travel, said roof modules being constructed identically or differently and, according to a variant embodiment,

forming, together with the transverse bow, a continuous roof exterior surface.

This affords the advantage that the modularly built driver cab roof of the driver cab model ranges can be matched to different requirements by simple exchange of one or both roof modules. This in particular creates the possibility of matching a rear region of the roof with a correspondingly designed rear roof module to a vehicle body. In this case, the front roof module and the rear roof module may independently of each other have a different height or a different roof shape.

In general, the solution according to the invention affords the advantage in the manufacturing process of using a basic module, which is identical per se, of the driver cab model ranges and only during a subsequent manufacturing step matching said basic module, by means of a differently designed transverse bow and/or by means of different roof modules, to the subsequent requirements imposed on the commercial vehicle. The possibility of forming variants at a late point in the manufacturing process makes the latter more flexible and, in addition, makes it possible to keep the manufacturing process simple and economical.

By this means, it is possible, for example, to intervene in the manufacturing process at a very advanced manufacturing stage and, by changing the transverse bow or the roof modules, to convert the driver cab from a driver cab with a normal roof to a driver cab with a very low roof (for example for a car transporter).

According to a preferred embodiment of the solution according to the invention, a variant of the front roof module can be used as the rear roof module or vice versa. This makes it possible that, both for a rear and

for a front roof opening, roof modules can be provided which were originally provided for the other roof opening in each case. Structurally identical roof modules with standardized dimensions are therefore produced, thus enabling the flexability during the manufacturing process and the flexability with regard to a retrospective conversion of the driver cab roof to be significantly increased. At the same time, the number of identical parts increases and these can therefore be produced more economically and cost-effectively.

It may be expedient to design the front roof module and/or the rear roof module as unit carriers. This affords the advantage that the roof modules can already be prepared at the factory and, as a result, safely and reliably support the unit to be carried in each case, for example a driver cab air conditioning system, an additional heating system or a cooling system for the body. Retrospective, complicated and expensive conversion operations for a unit carrier can be omitted as a result. At the same time, it is also possible, in principle, when changing the use of the truck, to match the roof module, by simple exchange thereof, to new requirements.

Furthermore, it is provided to design the front roof module and/or the rear roof module as a wind-directing body. In particular commercial vehicles with a large storage space volume, such as, for example, furniture trucks, provide a large amount of aerodynamic drag and thereby cause high fuel costs. By designing the front roof module and/or the rear roof module as a wind-directing body, it is possible to significantly reduce the aerodynamic drag of the commercial vehicle and thereby to save costs. In this case, in a manner similar to the abovementioned embodiments, the driver cab can be matched to the changed use requirement by

exchanging the roof modules during the manufacturing process and, in particular, also retrospectively.

In general, in accordance with further favorable embodiments, further variant embodiments of the front roof module and/or the rear roof module, for example as a storage space and/or as a sleeping berth, can be provided.

According to a preferred embodiment, at least two different transverse bows can be provided. The transverse bows, which, according to a variant embodiment, may at the same time be part of an exterior surface of the roof, may, in a different embodiment, for example with a different height, substantially influence the roof shape of the driver cab model ranges. For example, a transverse bow is conceivable in this case, which significantly increases the height of the driver cab and thereby additionally provides space for objects to be stored or for a sleeping berth. Another transverse bow which runs virtually at the same height as an upper end of the side walls makes it possible, for example, for the driver cab to be used for car transporters.

According to a particularly advantageous embodiment of the invention, at least one roof module can have a roof window. Roof windows are frequently ordered nowadays as an optional feature for motor vehicles and increase the driving comfort of the driver by the additional and natural incidence of light on the roof side and in addition avoid a feeling of isolation which frequently occurs in modern cabins of driver cabs.

Further important features and advantages of the invention emerge from the subclaims, from the drawings and from the associated descriptions of the figures with reference to the drawings.

It goes without saying that the features mentioned above and those which have yet to be explained below can be used not only in the respectively stated combination but also in other combinations or on their own without departing from the framework of the present invention.

Preferred exemplary embodiments of the invention are illustrated in the drawings and are explained in more detail in the description below, the same reference numbers referring to identical or similar or functionally identical components.

In the drawings:

fig. 1 shows a perspective view of a modularly built driver cab roof,

fig. 2 shows an illustration as in fig. 1, but in a different variant embodiment.

According to fig. 1, a modularly built driver cab 1 according to the invention of a driver cab model range for commercial vehicles has an essentially standardized basic module 2 which has a front wall 3, two side walls 4, 4' and a rear wall 5 and a driver cab floor 6. The basic module 2 of the driver cab 1 can be fitted on different vehicle chassis (not illustrated), thus enabling a very wide variety of commercial vehicles to be realized. The two side walls 4 and 4' each have a door opening on which a respective vehicle door (not illustrated) can be arranged. In addition, the two side walls 4, 4' are connected to each other in the transverse direction of the commercial vehicle via the front wall 3 at a front end, as seen in the direction of travel, and via the rear wall 5 at a rear end, as seen in the direction of travel.

On the roof side, the basic module 2 has a transverse bow 7 which connects the two side walls 4 and 4' and is arranged on them in the region of their B-pillars. The transverse bow 7 additionally stiffens the driver cab 1 in the transverse direction, is part of a modularly built driver cab roof 8 and forms part of an exterior surface of the roof.

According to fig. 1, the modularly built driver cab roof 8 is formed by a front roof module 9, a rear roof module 10 and the transverse bow 7, which adjoins the front roof module 9 on one side and adjoins the rear roof module 10 on the other side and separates said roof modules from each other. An upper frame section 11 of the front wall 3, an upper, front region 13, 13' of the two side walls 4 and 4' and the transverse bow 7 serve as a supporting surface or connecting surface of the front roof module 9 on or to the basic module 2. The respective rear, upper regions 14, 14' of the two side surfaces 4 and 4', an upper region (not referred to specifically) of the rear wall 5 and likewise the transverse bow 7 serve as a supporting surface or connecting surface of the rear roof module 10 on or to the basic module 2.

According to the illustration in fig. 1, the front roof module 9, the transverse bow 7 and the rear roof module 10 form a continuous exterior surface of the roof. In this case, the two roof modules 9 and 10 may be designed in such a manner that a variant of the front roof module 9 can be used as the rear roof module 10 or vice versa. In general, at least two different front roof modules 9 and/or two different rear roof modules 10 are provided, said roof modules differing from one another at least with regard to their shape and/or their function.

The basic module 2 illustrated by way of example in fig. 1 is designed in such a manner that the transverse bow 7 essentially divides the modular driver cab roof 8 in half. However, a variant embodiment is also conceivable, in which the front roof module 9 is longer or shorter than the rear roof module 10 and therefore the transverse bow 7 divides the driver cab roof 8 into two roof surfaces of different size.

According to various variant embodiments, the front roof module 9 and/or the rear roof module 10 can be designed, for example, as unit carriers, for example for a driver cab air conditioning system (not illustrated), an additional heating system or cooling device (not illustrated). It is also conceivable for at least one of the two roof modules 9, 10 to be designed as a wind-directing body. A wind-directing body of this type (not illustrated) is matched to the particular body of the commercial vehicle and reduces its aerodynamic drag and therefore the energy costs.

In addition or as an alternative, further embodiments of the roof modules 9, 10 according to the invention are conceivable, for example as a storage space or as a sleeping berth.

By means of the simple exchangeability of the two roof modules 9 and 10, a high degree of flexibility during the manufacturing process is achieved and, in addition, in principle a possible conversion of the commercial vehicle, for example when changing the use, can also be simplified. If, for example, a truck which has previously been used as a piece goods transporter is in future to transport frozen foods, then, after the body has been exchanged, only the rear roof module 10 has to be replaced by a roof module 10 designed as a unit carrier. The required cooling device for cooling the body can then be fitted thereon. If, in addition, an

improvement in the aerodynamic drag is desired, it is possible to replace the front roof module 9 by a corresponding roof module 9 with a wind-directing device. By way of this example, the wide range of use and the associated advantages of the solution according to the invention can be seen.

In addition, the solution according to the invention affords the advantage that the manufacturing process can be greatly rationalized by an essentially standardized basic module 2 being produced and premanufactured and only the modularly built driver cab roof 8 being matched to the specific subsequent requirements.

According to fig. 2, a further variant embodiment of the modularly built driver cab roof 8 is shown. In comparison to fig. 1, the front roof module 9, the transverse bow 7 and the rear roof module 10 have virtually no curvature here. This results in a greatly reduced roof height, which is advantageous in particular in the case of car transporters, since the space above the driver cab 1 can therefore also be used as a loading space.

According to a variant embodiment, a roof window 12 can be provided in the front roof module 9 and/or in the rear roof module 10, through which roof window natural or tinted daylight enters the driver cab 1 and thereby increases the driving comfort.

In summary, the essential features of the solution according to the invention can be characterized as follows:

the invention proposes, on a modularly built driver cab 1 which essentially has a standardized basic module 2 with a front wall 3, two side walls 4, 4' and a rear wall 5, to provide a modularly built driver cab roof 8.

The modularly built driver cab roof 8 comprises a transverse bow 7, a front roof module 9 and a rear roof module 10 which, as seen in the direction of travel, are arranged in front of or behind the transverse bow 7 which connects the two side walls 4 and 4' to each other in the region of their B-pillars and at the same time forms part of an exterior surface of the roof. In this case, at least two different front roof modules 9 and/or two different rear roof modules 10 are provided, said roof modules differing from one another at least with regard to their shape and/or their function.

The roof modules 9 and/or 10 can be designed, for example, as unit carriers for cooling devices, as wind-directing bodies, as a storage space or as a sleeping berth.